

# SEQUENCE LISTING

<110> Hekimi, Siegfried  
Shibata , Yukimasa  
Branicky , Robyn

<120> SCREENING ASSAYS FOR TARGETS AND DRUGS USEFUL IN TREATMENT AND  
PREVENTION OF LIPID METABOLISM DISORDERS

<130> 302087-999008

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<150> 60/454,925

<151> 2003-03-14

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<170> PatentIn version 3.2

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Met Phe Ser  
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Ser Arg Ile Trp Leu Leu Ala Val Thr Val Gly Val Cys Leu Ala  
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Val Pro Asp Leu Asp Glu Ile Lys Lys Asn Leu Arg Lys His Gly Pro  
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gac tac tat aaa aat cag ccg aaa atg aac gag aac act gtc cga cta 322  
Asp Tyr Tyr Lys Asn Gln Pro Lys Met Asn Glu Asn Thr Val Arg Leu  
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Leu Lys Val Asp Tyr Trp Phe Arg Thr Glu Ser Met Ile Tyr Asp Asp  
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Lys	Ala	Ser	Asp	Glu	Ser	Asp	Ala	Thr	Trp	Asn	Phe	Leu	Tyr	Ala	Ile	145	
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Val	Asn	Thr	Ile	Tyr	Thr	Pro	Ala	Glu	Tyr	Gly	Glu	Gly	Asp	Glu	Gln	160	
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Thr	Val	Asp	Thr	Ile	Tyr	Gly	Arg	Cys	Phe	Val	Asn	Phe	Gly	Arg	Pro	175	
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Glu	Asp	Lys	Arg	Phe	Arg	Arg	Ile	Ile	Glu	Lys	Cys	Asp	Leu	Gly	Tyr	195	
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Gln	Asp	Val	Trp	Tyr	Thr	Gln	Asn	Thr	Lys	Val	Asp	Ala	Asp	Ile	Ile	225	
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Met	Val	Asp	Ala	Ile	Glu	Met	Leu	Ala	Phe	Lys	Ser	Pro	Leu	His	Glu	240	
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Lys	Tyr	Gly	Phe	Thr	Leu	Glu	Ser	Arg	Thr	His	Val	Glu	Ile	Thr	Asn	255	
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cgt	aca	cgt	gtc	ttc	gtc	acc	agc	tac	tgt	aat	gat	acc	gta	cca	tcc	994	
Arg	Thr	Arg	Val	Phe	Val	Thr	Ser	Tyr	Cys	Asn	Asp	Thr	Val	Pro	Ser	275	
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gcc	aaa	tgc	gcc	gag	cag	gcg	ttt	gga	gca	gtt	cgt	gtc	gga	gga	aaa	1042	
Ala	Lys	Cys	Ala	Glu	Gln	Ala	Phe	Gly	Ala	Val	Arg	Val	Gly	Gly	Lys	290	
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gag aat gat cat gtt cta tct ctt atc gcc agt gcc ctc gga gga gtc Glu Asn Asp His Val Leu Ser Leu Ile Ala Ser Ala Leu Gly Gly Val 360 365 370			1282
ggt aca gca gaa tct atc acc act gct cgt gaa gtt ctt ctt acc gcg Gly Thr Ala Glu Ser Ile Thr Thr Ala Arg Glu Val Leu Leu Thr Ala 375 380 385			1330
tcc cct gat tat ctt gat gat tta ctt ttt gga att tca caa agc tcg Ser Pro Asp Tyr Leu Asp Asp Leu Leu Phe Gly Ile Ser Gln Ser Ser 390 395 400			1378
tct aac aat gag aaa tgg cac aaa caa ttg atg tac tgg ctc ggg tcc Ser Asn Asn Glu Lys Trp His Lys Gln Leu Met Tyr Trp Leu Gly Ser 405 410 415			1426
ctt gat aaa aaa tca gaa gaa tat tgg aag gtg gct aac aca att gca Leu Asp Lys Lys Ser Glu Glu Tyr Trp Lys Val Ala Asn Thr Ile Ala 420 425 430 435			1474
act gtg ctg aac aaa cga tgt gaa gca tcg aca agc agc tta aac tct Thr Val Leu Asn Lys Arg Cys Glu Ala Ser Thr Ser Ser Leu Asn Ser 440 445 450			1522
tgc aat aaa gga aag gaa acg att gtc aac aaa ttc atc act gac ctg Cys Asn Lys Gly Lys Glu Thr Ile Val Asn Lys Phe Ile Thr Asp Leu 455 460 465			1570
aca gct ggt gga gtt gaa gtc aga gtt ctc gag gtt ctg gag aat att Thr Ala Gly Gly Val Glu Val Arg Val Leu Glu Val Leu Glu Asn Ile 470 475 480			1618
cca att ttc gga tcc tac act ttt gct aag aaa ttc ata tgt gaa act Pro Ile Phe Gly Ser Tyr Thr Phe Ala Lys Lys Phe Ile Cys Glu Thr 485 490 495			1666
gag tcg gag gat gtt cag aaa gcc gca ctc aac gtt att ctg gct gcg Glu Ser Glu Asp Val Gln Lys Ala Ala Leu Asn Val Ile Leu Ala Ala 500 505 510 515			1714
agc aag aat ttg tat gaa aca caa ctc acc cac aag ctc atc aaa ctc Ser Lys Asn Leu Tyr Glu Thr Gln Leu Thr His Lys Leu Ile Lys Leu 520 525 530			1762
ttc cgc aac aca tgc agc cag gaa act cca act tct cat tct caa ctc Phe Arg Asn Thr Cys Ser Gln Glu Thr Pro Thr Ser His Ser Gln Leu 535 540 545			1810
gcc atc gac att ctc ctc aaa tgt gtc cct gat cat caa aac gtg gcc Ala Ile Asp Ile Leu Leu Lys Cys Val Pro Asp His Gln Asn Val Ala 550 555 560			1858
acc ttg atc ctg cga act gag act ctt aac ccc gat gat cag gaa aaa Thr Leu Ile Leu Arg Thr Glu Thr Leu Asn Pro Asp Asp Gln Glu Lys 565 570 575			1906

tgg cat tac ctg tac aag gct atc gag gca agc gga aac aag gat gaa	1954
Trp His Tyr Leu Tyr Lys Ala Ile Glu Ala Ser Gly Asn Lys Asp Glu	
580 585 590 595	
ctg aag gcc gaa ttt tgg tcg cga atg cgg aag ttt aag gtt ttc cga	2002
Leu Lys Ala Glu Phe Trp Ser Arg Met Arg Lys Phe Lys Val Phe Arg	
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Pro Asn Phe Leu His Arg Ala Leu Gln Ala Asp Ser His Val His Trp	
615 620 625	
caa gag att gca gat gct tca aac ttc caa ctg ttc tcc act gcg aac	2098
Gln Glu Ile Ala Asp Ala Ser Asn Phe Gln Leu Phe Ser Thr Ala Asn	
630 635 640	
aca gaa ttc ttg caa aaa tcc ttt aag aga tcc atc ttt gag cta tcg	2146
Thr Glu Phe Leu Gln Lys Ser Phe Lys Arg Ser Ile Phe Glu Leu Ser	
645 650 655	
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Met Lys Lys Gly Arg Lys Glu His Asn Leu Phe Ser Leu Ser Ile Asp	
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act gag cac ctt gag caa ttt gtg act gga tca gct tct tca aga tcc	2242
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Gly Ala Pro Gln Gly Ser Val Arg Ile Gly Val Ala Gly His Lys Leu	
695 700 705	
cca act cac cac atc ttc aag gga agt act gac ctg ctt tcc act gtc	2338
Pro Thr His His Ile Phe Lys Gly Ser Thr Asp Leu Leu Ser Thr Val	
710 715 720	
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Trp Glu Ala Asp Gly Arg Thr His Lys Ala Phe Glu Gly His Val Pro	
725 730 735	
gtt aga gac gtt cga cta tcg gtg cca ttg ctc tct gga ttg act ctt	2434
Val Arg Asp Val Arg Leu Ser Val Pro Leu Leu Ser Gly Leu Thr Leu	
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Asp Val Asp Ser Val Gly Ala Ile Ser Met Arg Val Leu Ala Ser Ala	
760 765 770	
gaa gtt tcc ctt tgg aat cag aga tcg aat gca aag gca gag gca tat	2530
Glu Val Ser Leu Trp Asn Gln Arg Ser Asn Ala Lys Ala Glu Ala Tyr	
775 780 785	
aca tcc gga tcc tta cac cta acg gct tcc ctc tac cat cac tca gaa	2578
Thr Ser Gly Ser Leu His Leu Thr Ala Ser Leu Tyr His His Ser Glu	
790 795 800	
cca gtc cgc cac gtg gaa tcc aca atc tcg gcg ctc tcc acc ttc acc	2626
Pro Val Arg His Val Glu Ser Thr Ile Ser Ala Leu Ser Thr Phe Thr	
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 Thr Asp Thr Arg Ala Ile Phe Glu Thr Leu Pro Tyr Asp Phe Cys Leu  
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aga aca tct aat agc aat gtt gat atc aat cag aaa aca gtt gta cag 2722  
 Arg Thr Ser Asn Ser Asn Val Asp Ile Asn Gln Lys Thr Val Val Gln  
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gat caa att gga aag cat aaa aag aag acg ctt aat cga aaa cga gta 2770  
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 855 860 865

cat cct gga gtt aca tac agg ttg gat gac tcg acg att cgg cag tgt 2818  
 His Pro Gly Val Thr Tyr Arg Leu Asp Asp Ser Thr Ile Arg Gln Cys  
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His Gly Pro Asp Tyr Tyr Lys Asn Gln Pro Lys Met Asn Glu Asn Thr  
 35 40 45

Val Arg Leu Leu Lys Val Asp Tyr Trp Phe Arg Thr Glu Ser Met Ile  
 50 55 60

Tyr Asp Asp Ile Asp Asn Lys Glu Lys Asp Pro Ser Thr Val Ile Ala  
 65 70 75 80

Gly Asn Phe Ser Phe Glu Thr Leu His His Asp Val Glu Gly Gly Met  
 85 90 95

Leu Gly Arg Phe Thr Leu Thr Gln Cys Asn Thr Asp Asn Cys Gly Asn  
 100 105 110

Pro Ser Pro Ile Tyr Ile Ala Phe Arg Gln Gly Gly Asn Asn Ala Glu  
 115 120 125

His	Ile	Leu	Lys	Ala	Ser	Asp	Glu	Ser	Asp	Ala	Thr	Trp	Asn	Phe	Leu	130	135	140	
Tyr	Ala	Ile	Val	Asn	Thr	Ile	Tyr	Thr	Pro	Ala	Glu	Tyr	Gly	Glu	Gly	145	150	155	160
Asp	Glu	Gln	Thr	Val	Asp	Thr	Ile	Tyr	Gly	Arg	Cys	Phe	Val	Asn	Phe	165	170	175	
Gly	Arg	Pro	Glu	Asp	Lys	Arg	Phe	Arg	Arg	Ile	Ile	Glu	Lys	Cys	Asp	180	185	190	
Leu	Gly	Tyr	Gly	Thr	Asn	Phe	Thr	Lys	Phe	Glu	Gly	Ile	Glu	Ser	Val	195	200	205	
Gln	Tyr	Asp	Gln	Asp	Val	Trp	Tyr	Thr	Gln	Asn	Thr	Lys	Val	Asp	Ala	210	215	220	
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Leu	His	Glu	Lys	Tyr	Gly	Phe	Thr	Leu	Glu	Ser	Arg	Thr	His	Val	Glu	245	250	255	
Ile	Thr	Asn	Arg	Thr	Arg	Val	Phe	Val	Thr	Ser	Tyr	Cys	Asn	Asp	Thr	260	265	270	
Val	Pro	Ser	Ala	Lys	Cys	Ala	Glu	Gln	Ala	Phe	Gly	Ala	Val	Arg	Val	275	280	285	
Gly	Gly	Lys	Leu	Tyr	Glu	His	Val	Lys	Ile	Ala	Gln	Glu	Gln	Ser	Asn	290	295	300	
Lys	Leu	Thr	Lys	Leu	Ile	Gly	Thr	Tyr	Arg	Arg	His	Leu	Gln	Asp	Met	305	310	315	320
Gly	Asp	Ser	His	Ile	Cys	Glu	Lys	His	Ser	Leu	Leu	Tyr	Ser	Gln	Ile	325	330	335	
Ala	Gln	Glu	Ala	Arg	Leu	Ala	Lys	Arg	Gln	Asp	Trp	Glu	Ala	Ala	Ile	340	345	350	
Gln	Tyr	Pro	Glu	Asn	Asp	His	Val	Leu	Ser	Leu	Ile	Ala	Ser	Ala	Leu	355	360	365	

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Gln Ser Ser Ser Asn Asn Glu Lys Trp His Lys Gln Leu Met Tyr Trp  
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Leu Gly Ser Leu Asp Lys Lys Ser Glu Glu Tyr Trp Lys Val Ala Asn  
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Thr Ile Ala Thr Val Leu Asn Lys Arg Cys Glu Ala Ser Thr Ser Ser  
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Thr Asp Leu Thr Ala Gly Gly Val Glu Val Arg Val Leu Glu Val Leu  
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Glu Asn Ile Pro Ile Phe Gly Ser Tyr Thr Phe Ala Lys Lys Phe Ile  
 485 490 495

Cys Glu Thr Glu Ser Glu Asp Val Gln Lys Ala Ala Leu Asn Val Ile  
 500 505 510

Leu Ala Ala Ser Lys Asn Leu Tyr Glu Thr Gln Leu Thr His Lys Leu  
 515 520 525

Ile Lys Leu Phe Arg Asn Thr Cys Ser Gln Glu Thr Pro Thr Ser His  
 530 535 540

Ser Gln Leu Ala Ile Asp Ile Leu Leu Lys Cys Val Pro Asp His Gln  
 545 550 555 560

Asn Val Ala Thr Leu Ile Leu Arg Thr Glu Thr Leu Asn Pro Asp Asp  
 565 570 575

Gln Glu Lys Trp His Tyr Leu Tyr Lys Ala Ile Glu Ala Ser Gly Asn  
 580 585 590

Lys Asp Glu Leu Lys Ala Glu Phe Trp Ser Arg Met Arg Lys Phe Lys  
 595 600 605

Val Phe Arg Pro Asn Phe Leu His Arg Ala Leu Gln Ala Asp Ser His  
610 615 620

Val His Trp Gln Glu Ile Ala Asp Ala Ser Asn Phe Gln Leu Phe Ser  
625 630 635 640

Thr Ala Asn Thr Glu Phe Leu Gln Lys Ser Phe Lys Arg Ser Ile Phe  
645 650 655

Glu Leu Ser Met Lys Lys Gly Arg Lys Glu His Asn Leu Phe Ser Leu  
660 665 670

Ser Ile Asp Thr Glu His Leu Glu Gln Phe Val Thr Gly Ser Ala Ser  
675 680 685

Ser Arg Ser Gly Ala Pro Gln Gly Ser Val Arg Ile Gly Val Ala Gly  
690 695 700

His Lys Leu Pro Thr His His Ile Phe Lys Gly Ser Thr Asp Leu Leu  
705 710 715 720

Ser Thr Val Trp Glu Ala Asp Gly Arg Thr His Lys Ala Phe Glu Gly  
725 730 735

His Val Pro Val Arg Asp Val Arg Leu Ser Val Pro Leu Leu Ser Gly  
740 745 750

Leu Thr Leu Asp Val Asp Ser Val Gly Ala Ile Ser Met Arg Val Leu  
755 760 765

Ala Ser Ala Glu Val Ser Leu Trp Asn Gln Arg Ser Asn Ala Lys Ala  
770 775 780

Glu Ala Tyr Thr Ser Gly Ser Leu His Leu Thr Ala Ser Leu Tyr His  
785 790 795 800

His Ser Glu Pro Val Arg His Val Glu Ser Thr Ile Ser Ala Leu Ser  
805 810 815

Thr Phe Thr Thr Asp Thr Arg Ala Ile Phe Glu Thr Leu Pro Tyr Asp  
820 825 830

Phe Cys Leu Arg Thr Ser Asn Ser Asn Val Asp Ile Asn Gln Lys Thr  
835 840 845



Val Val Gln Asp Gln Ile Gly Lys His Lys Lys Lys Thr Leu Asn Arg  
 850 855 860

Lys Arg Val His Pro Gly Val Thr Tyr Arg Leu Asp Asp Ser Thr Ile  
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Arg Gln Cys Asn Ser Tyr Leu Glu Gln Phe Arg Leu  
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 35 40 45

Ile Asp Asn Lys Glu Lys Asp Pro Ser Thr Val Ile Ala Gly Asn Phe  
 50 55 60

Ser Phe Glu Thr Leu His His Asp Val Glu Gly Gly Leu Gly Arg Phe  
 65 70 75 80

Thr Leu Thr Gln Cys Asn Thr Asp Asn Cys Gly Asn Pro Ser Pro Ile  
 85 90 95

Tyr Ile Ala Phe Arg Gln Gly Gly Asn Asn Ala Glu His Ile Leu Lys  
 100 105 110

Ala Ser Asp Glu Ser Asp Ala Thr Trp Asn Phe Leu Tyr Ala Ile Val  
 115 120 125

Asn Thr Ile Tyr Thr Pro Ala Glu Tyr Gly Glu Gly Asp Glu Gln Thr  
 130 135 140

Val Asp Thr Ile Tyr Gly Arg Cys Phe Val Asn Phe Gly Arg Pro Glu  
 145 150 155 160

Asp Lys Arg Phe Arg Arg Ile Ile Glu Lys Cys Asp Leu Gly Tyr Gly  
 165 170 175

Thr	Asn	Phe	Thr	Lys	Phe	Glu	Gly	Ile	Glu	Ser	Val	Gln	Tyr	Asp	Gln
			180						185			190			
Asp	Val	Trp	Tyr	Thr	Gln	Asn	Thr	Val	Asp	Ala	Asp	Ile	Ile	Met	Val
			195			200						205			
Asp	Ala	Ile	Glu	Met	Leu	Ala	Phe	Lys	Val	Asp	Ala	Asp	Ile	Ile	Met
			210			215			220						
Val	Asp	Ala	Ile	Glu	Met	Leu	Ala	Phe	Lys	Ser	Pro	Leu	His	Glu	Lys
225			230			235						240			
Tyr	Gly	Phe	Thr	Leu	Glu	Ser	Arg	Thr	His	Val	Glu	Ile	Thr	Asn	Arg
			245			250						255			
Thr	Arg	Val	Glu	Ala	Ala	Ile	Gln	Tyr	Pro	Glu	Asn	Asp	His	Val	Leu
			260			265			270						
Ser	Leu	Ile	Ala	Ser	Ala	Leu	Gly	Gly	Val	Gly	Thr	Ala	Glu	Ser	Ile
			275			280			285						
Thr	Thr	Ala	Arg	Arg	Glu	Val	Leu	Leu	Thr	Ala	Ser	Pro	Asp	Tyr	Leu
290			295			300									
Asp	Asp	Leu	Leu	Phe	Gly	Ile	Ser	Gln	Ser	Ser	Ser	Asn	Asn	Glu	Lys
305			310			315						320			
Trp	His	Lys	Gln	Leu	Met	Tyr	Trp	Leu	Gly	Ser	Asp	Lys	Lys	Ser	Glu
			325			330						335			
Glu	Tyr	Trp	Lys	Val	Ala	Asn	Thr	Ile	Ala	Thr	Val	Leu	Asn	Lys	Arg
			340			345			350						
Cys	Glu	Ala	Ser	Thr	Ser	Ser	Leu	Asn	Ser	Cys	Asn	Lys	Gly	Lys	Glu
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Thr	Ile	Val	Asn	Lys	Phe	Ile	Thr	Asp	Leu	Thr	Ala	Gly	Gly	Val	Glu
370			375			380									
Val	Arg	Val	Leu	Glu	Val	Leu	Glu	Asn	Ile	Pro	Ile	Phe	Gly	Ser	Tyr
385			390			395						400			
Thr	Phe	Ala	Lys	Lys	Phe	Ile	Cys	Glu	Thr	Glu	Ser	Glu	Asp	Val	Gln
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Lys Ala Ala Leu Asn Val Ile Leu Ala Ala Ser Lys Asn Leu Tyr Glu  
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Thr Gln Leu Thr His Lys Leu Ile Lys Leu Phe Arg Asn Thr Cys Ser  
 435 440 445

Gln Glu Thr Pro Thr Ser His Ser Gln Leu Ala Ile Asp Ile Leu Leu  
 450 455 460

Lys Cys Val Pro Asp His Gln Asn Val Ala Thr Leu Ile Leu Arg Thr  
 465 470 475 480

Glu Thr Leu Asn Pro Asp Gln Glu Lys Trp His Tyr Leu Tyr Lys Ala  
 485 490 495

Ile Glu Ala Ser Gly Asn Lys Asp Glu Leu Lys Ala Glu Phe Trp Ser  
 500 505 510

Arg Met Arg Lys Phe Lys Val Phe Arg Pro Asn Phe Leu His Arg Ala  
 515 520 525

Leu Gln Ala Asp Ser His Val His Trp Gln Glu Ile Ala Asp Ala Ser  
 530 535 540

Asn Phe Gln Leu Phe Ser Thr Ala Asn Thr Glu Phe Leu Gln Lys Ser  
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Phe Lys Arg Ser Ile Phe Glu Leu Ser Met Lys Lys Gly Arg Lys Glu  
 565 570 575

His Asn Asn Leu Phe Ser Leu Ser Ile Thr Glu His Leu Glu Gln Phe  
 580 585 590

Val Thr Gly Ser Ala Ser Ser Arg Ser Gly Ala Pro Gln Gly Val Arg  
 595 600 605

Ile Gly Val Ala Gly His Lys Leu Pro Thr His His Ile Phe Lys Lys  
 610 615 620

Gly Ser Thr Asp Leu Leu Ser Thr Val Trp Glu Ala Asp Gly Arg Thr  
 625 630 635 640

His Lys Ala Phe Glu Gly His Val Pro Val Arg Asp Val Arg Leu Ser  
 645 650 655

Val Pro Leu Leu Ser Gly Leu Thr Leu Asp Val Asp Ser Val Gly Ala  
660 665 670

Ile Ser Met Arg Val Leu Ala Ser Glu Ala Val Ser Leu Trp Asn Gln  
675 680 685

Arg Ser Asn Ala Lys Ala Glu Ala Tyr Thr Ser Gly Ser Leu His Leu  
690 695 700

Thr Ala Ser Leu Tyr His His Ser Glu Pro Val Arg His Val Glu Ser  
705 710 715 720

Thr Ile Ser Ala Leu Ser Thr Phe Thr Asp Thr Arg Ala Ile Phe Glu  
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Thr Leu Pro Tyr Asp Phe Cys Leu Arg Thr Ser Asn Ser Asn Val Asp  
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Ile Asn Gln Lys Thr Val Val Gln Asp Gln Ile Gly Lys His Lys Lys  
755 760 765

Lys Thr Leu Asn Arg Lys Arg Val His Pro Gly Val Thr Tyr Arg Leu  
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Pro Glu Gly Asn Val Gly Phe Arg Ile Ser Ser Asp Val Asp Ile Asn  
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Leu Ala Trp Arg Asn Pro Asn Pro Glu Ile Gln Asp Glu Gln Leu Leu  
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Gln Val Gln Ile Ser Asn Ile Gln Val Glu Ser Ala Gly Lys His Ser  
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Arg Lys Asn Asn Ile Phe His Gly Ser Ser Ala Glu Ser Ile Leu Gly  
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Lys Val Arg Leu Glu Ala Leu Gln Arg Pro Phe Leu Val Leu Trp Lys  
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Met Gly Lys Ile Arg Ser Leu Tyr Ala Gln Lys Ala Glu Pro Ala Thr  
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Val Lys Asn Leu Lys Arg Gly Val Ala Ser Met Leu Met Met Gln Leu  
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Lys Ser Gly Lys Met Ser Glu Ala Asp Ala Ser Gly Lys Cys Leu Val  
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Glu Tyr Lys Val Asn Lys His Gln Gln Val Ile Arg Thr Lys His Leu  
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Glu Thr Cys Lys Ser Gln Glu Thr Gly Phe Thr Thr His Ser Pro Val  
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Leu Gly Ile Ser Gly Lys Cys Ala Ala Glu Thr Val Ile Thr Leu Glu  
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Asn Gly Ile Ile Lys Ser Ala Asp Ala Lys Glu Thr His Val Leu Ser  
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Ile Asn Ala Arg His Lys Ala Ala Thr Lys Val Leu Ser Arg Gln Ser  
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Leu Thr Leu Lys Ala Ile Glu Ala Gly Pro Ala Glu Val Ala Gly Lys  
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Asp Val Ala Gly Val Val Lys Ala Leu Asp Asp Lys Phe Leu Ser Val  
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Gly Val Ile Val Glu Lys Thr Lys Pro Lys Cys Lys Gly Cys Pro Asn  
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Leu Met Glu Thr Trp Lys Ala Val Arg Gln Leu Glu Pro Asn Ser Leu  
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Ser Lys Ala Glu Ala Pro Arg Ser Phe Leu Thr Leu Val His Ser Leu  
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Arg Lys Ser Ser Lys Ser Glu Ile Leu Thr Val Leu Gln Asn Cys Ser  
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Lys Thr Ala Leu Pro Gln Leu Val Asp Ala Val Thr Ser Ala Gln Thr  
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Pro Ser Ser Leu Ser Ala Ala Ile Leu Glu Phe Leu Phe Ser Lys Lys  
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Asp Gly Leu Ile Leu Gln Glu Arg Leu Tyr Ala Cys Gly Phe Ala Ser  
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His Pro Thr Glu Ser Met Leu Gln Ser Leu Leu Glu Val Ser Gln Gly  
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Lys Ile Gly Ser Thr Glu Ile Lys Glu Ser Val Val Ile Ile Met Gly  
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Ala Leu Leu Arg Lys Leu Cys Leu Lys Gly Ala Cys Asp Leu Pro Val  
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Val Leu Lys Val Lys Glu Leu Leu Leu Ala Gly Pro Asp Ser Thr Gln  
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Glu Glu Ser Glu Val Gln Met Tyr Leu Leu Ala Leu Lys Asn Ala Leu  
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Leu Pro Glu Gly Ile Pro Val Leu Thr Lys Tyr Ala Glu Ser Glu Val  
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Gly Ala Tyr Ser Thr Ile Leu Ala Ile Thr Ala Ala Leu Gln Arg Tyr  
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Asp Pro Ala Leu Ile Thr Ala Glu Val Lys Lys Ala Leu Asn Arg Ile  
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Tyr His Gln Asn Gln Arg Ile Tyr Glu Lys Asn Val Arg Ala Ala Ala  
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Ala Asp Val Ile Met Ser Ser Asn Pro Ser Tyr Met Glu Val Lys Asn  
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Leu Ser Lys Ile Gln Asp Asp Val Leu Arg Phe Gln Met Pro Ala Tyr  
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Lys Leu Val Arg Gln Val Met Lys Asp Met Ile Ser His Asn Tyr Asp  
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Arg Phe Ser Lys Thr Gly Ser Ser Ser Ala Tyr Ser Gly Phe Met Ala  
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Glu Thr Val Val Thr Cys Thr Tyr Asn Leu Asp Ile Leu Tyr Ser Gly  
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Ser Gly Val Leu Arg Arg Ser Asn Met Asn Ile Tyr Gly Gln Ser Asn  
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Asn Ala Leu Leu His Gly Leu Gln Val Thr Ile Glu Ala Gln Gly Leu  
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Glu Ser Pro Ile Ala Ala Thr Pro Asp Glu Gly Glu Glu Glu Leu Glu  
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Ser Phe Ala Gly Met Ser Ala Leu Leu Phe Asp Val Gln Leu Arg Pro  
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Val Thr Phe Phe Lys Gly Tyr Ser Asp Leu Leu Met Ser Lys Met Phe  
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Ser Thr Ser Gly Asp Pro Ile Asn Val Val Lys Gly Leu Ile Leu Leu  
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Thr Asp His Ser Gln Val Ile Pro Leu Gln Ser Gly Leu Arg Ala Ser  
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Ala Glu Phe Gln Ala Gly Leu Ser Ile Asp Ile Ser Gly Gly Met Glu  
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Phe Ser Leu Trp Tyr Arg Glu Ser Lys Thr Ser Val Asn Asn Arg Gly  
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Glu Glu Leu Leu Arg Ala Leu Leu Ser Lys Phe Lys Gly Ser Phe Ala  
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Ser Asn Asp Ile Arg Glu Ser Val Met Ile Thr Ile Gly Ala Leu Val  
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Arg Lys Leu Cys Gln Asn Glu Gly Lys Leu Lys Ala Val Val Glu Ala  
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Lys Lys Leu Ile Leu Gly Gly Leu Glu Lys Pro Glu Lys Lys Glu Asp  
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Thr Thr Met Tyr Leu Leu Ala Leu Lys Asn Ala Leu Leu Pro Glu Gly  
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Ile Pro Leu Leu Leu Lys Tyr Ala Glu Ala Gly Glu Gly Pro Val Ser  
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His Leu Ala Thr Thr Val Leu Gln Arg Tyr Asp Val Ser Phe Ile Thr  
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Asp Glu Val Lys Lys Thr Leu Asn Arg Ile Tyr His Gln Asn Arg Lys  
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Val His Glu Lys Thr Val Arg Thr Thr Ala Ala Ala Val Ile Leu Lys  
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Asn Pro Ser Tyr Met Asp Lys Asn Ile Leu Leu Ser Ile Gly Glu Leu  
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Pro Lys Glu Met Asn Lys Lys Tyr Met Leu Thr Val Val Gln Asp Ile  
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Leu His Phe Glu Met Pro Ala Ser Lys Met Ile Arg Arg Val Leu Lys  
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Glu Asn Leu Asp Ser Tyr Ala Gly Met Ser Ala Ile Leu Phe Asp Val  
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Gln Leu Arg Pro Val Thr Phe Phe Asn Gly Tyr Ser Asp Leu Met Ser  
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Lys Met Leu Ser Ala Ser Gly Asp Pro Val Ser Val Val Lys Gly Leu  
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Ile Leu Leu Ile Asp His Ser Gln Asp Ile Gln Leu Gln Ser Gly Leu  
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Lys Ala Asn Met Glu Ile Gln Gly Gly Leu Ala Ile Asp Ile Ser Gly  
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Ser Met Glu Phe Ser Leu Trp Tyr Arg Glu Ser Lys Thr Arg Val Lys  
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Asn Arg Val Ala Val Val Ile Thr Ser Asp Val Thr Val Asp Ala Ser  
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Phe Val Lys Ala Gly Leu Glu Ser Arg Ala Glu Thr Glu Ala Gly Leu  
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Glu Phe Ile Ser Thr Val Gln Phe Ser Gln Tyr Pro Phe Leu Val Cys  
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Met Gln Met Asp Asp Glu Ala Pro Phe Arg Gln Phe Glu Lys Tyr Glu  
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Arg Leu Ser Gly Arg Gly Tyr Val Ser Arg Arg Arg Lys Glu Ser Leu  
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Val Ala Gly Cys Glu Leu Pro Leu His Gln Gln Asn Ser Glu Met Cys  
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Thr Met Lys Asp Val Asn Val Glu Asn Val Asn Gln Gln Arg Gly Glu		
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Lys Ser Ile Phe Lys Gly Lys Ser Pro Ser Lys Ile Met Gly Lys Glu		
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Asn Leu Glu Ala Leu Gln Arg Pro Leu Leu His Leu Ile His Gly Lys		
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Val Lys Glu Phe Tyr Ser Tyr Gln Asn Glu Ala Val Ala Ile Glu Asn		
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Ile Lys Arg Gly Leu Ala Ser Ser Leu Phe Gln Thr Gln Leu Ser Ser		
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Gly Thr Thr Asn Glu Val Asp Ile Ser Gly Asn Cys Lys Val Thr Tyr		
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Gln Ala His Gln Asp Lys Val Ile Lys Ile Lys Ala Leu Asp Ser Cys		
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Lys Ile Ala Arg Ser Gly Phe Thr Thr Pro Asn Gln Val Leu Gly Val		
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Ser Ser Lys Ala Thr Ser Val Thr Thr Tyr Lys Ile Glu Asp Ser Phe		
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Val Ile Ala Val Leu Ala Glu Glu Thr His Asn Phe Gly Leu Asn Phe		
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Leu Gln Thr Ile Lys Gly Lys Ile Val Ser Lys Gln Lys Leu Glu Leu		
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Lys Thr Thr Glu Ala Gly Pro Arg Leu Met Ser Gly Lys Gln Ala Ala		
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Arg Ser Arg Lys Tyr Leu Gln Pro Asp Asn Leu Ser Lys Ala Glu Ala  
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Val Arg Asn Phe Leu Ala Phe Ile Gln His Leu Arg Thr Ala Lys Lys  
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Glu Glu Ile Leu Gln Ile Leu Lys Met Glu Asn Lys Glu Val Leu Pro  
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Gln Val Asp Ala Val Thr Ser Ala Gln Thr Ser Asp Ser Leu Glu Ala  
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Ile Leu Asp Phe Lys Ser Asp Ser Ser Ile Ile Leu Gln Glu Arg Phe  
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Leu Tyr Ala Cys Gly Phe Ala Ser His Pro Asn Glu Glu Leu Leu Arg  
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Ala Leu Ile Ser Lys Phe Lys Gly Ser Ile Gly Ser Ser Asp Ile Arg  
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Glu Thr Val Met Ile Ile Thr Gly Thr Leu Val Arg Lys Leu Cys Gln  
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Asn Glu Gly Cys Lys Leu Lys Ala Val Val Glu Ala Lys Lys Leu Ile  
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Leu Gly Gly Leu Glu Lys Ala Glu Lys Lys Glu Asp Thr Arg Met Tyr  
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Leu Leu Ala Leu Lys Asn Ala Leu Leu Pro Glu Gly Ile Pro Ser Leu  
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Leu Lys Tyr Ala Glu Ala Gly Glu Gly Pro Ile Ser His Leu Ala Thr  
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Thr Ala Leu Gln Arg Tyr Asp Leu Pro Phe Ile Thr Asp Glu Val Lys  
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Lys Thr Leu Asn Arg Ile Tyr His Gln Asn Arg Lys Val His Glu Lys  
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Cys	Leu	Glu	Ala	Leu	Ile	Ala	Ala	Thr	Pro	Asp	Glu	Gly	Glu	Glu	Asn	645	650	655
Leu	Asp	Ser	Tyr	Ala	Gly	Met	Ser	Ala	Ile	Leu	Phe	Asp	Val	Gln	Leu	660	665	670
Arg	Pro	Val	Thr	Phe	Phe	Asn	Gly	Tyr	Ser	Asp	Leu	Met	Ser	Lys	Met	675	680	685
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Ile	Glu	Val	Gln	Gly	Gly	Leu	Ala	Ile	Asp	Ile	Ser	Gly	Ala	Met	Glu	725	730	735
Phe	Ser	Leu	Trp	Tyr	Arg	Glu	Ser	Lys	Thr	Arg	Val	Lys	Asn	Arg	Val	740	745	750

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Gly Leu Glu Thr Ser Thr Glu Thr Glu Ala Gly Leu Glu Phe Ile Ser  
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Thr Val Gln Phe Ser Gln Tyr Pro Phe Leu Val Cys Met Gln Met Asp  
785 790 795 800

Lys Asp Glu Ala Pro Phe Arg Gln Phe Glu Lys Lys Tyr Glu Arg Leu  
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Ser Thr Gly Arg Gly Tyr Val Ser Gln Lys Arg Lys Glu Ser Val Leu  
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gcattctctc attcacaagg attcggagaa ctcatctca aaggaaaatt gttcaaaaat 3600
gtggaaaatc tacggggaaa gaataattcg aatgcgaaaa ttcacccgac ttctgatgac 3660
ttgcagccga tgcttatttc tagtgtgctt gatgacagcc aaggagcttc aagtattaat 3720
gcaatgcacc ttccaatggg tacacgtcca cagaatgtac ccatacatt gaatgtaaat 3780
actgatgact ggtctcaatc atcggatttc cgtccagcct atgcaaagga accatcacca 3840
ctgcagggtg cagtaatccg tggcgtatga cggagccata gaaaccacgt gtattcgctg 3900
gaaactcagg tcgaagaaca accagacgta atcactcgcc tttaa 3945

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<211> 1314
<212> PRT
<213> Caenorhabditis elegans

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<400> 8
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Met Phe Ser Trp Leu Pro Cys Cys Ser Ser Thr Ser Asn Glu Lys Asn
1           5           10           15

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Ala Pro Thr Glu Arg Arg Leu Arg Ala Asn Asp Arg Glu Tyr Asn Ala
          20           25           30

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```
Gln Phe Lys Tyr Ala Asp Asn Val Ile Lys Thr Ser Lys Tyr Asn Ile
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35	40	45													
Ile	Thr	Phe	Ile	Pro	Gln	Asn	Leu	Phe	Glu	Gln	Phe	Gln	Arg	Ile	Ala
50						55					60				
Asn	Phe	Tyr	Phe	Leu	Val	Leu	Met	Ile	Leu	Gln	Phe	Ile	Pro	Gln	Ile
65					70					75					80
Ser	Ser	Ile	Ser	Trp	Tyr	Ser	Thr	Ala	Val	Pro	Leu	Val	Ile	Val	Leu
				85					90					95	
Ala	Phe	Ser	Ala	Ile	Lys	Asp	Gly	Tyr	Asp	Asp	Ala	Gln	Arg	His	Ile
			100					105						110	
Ser	Asp	Arg	Asn	Val	Asn	Gly	Arg	Lys	Ser	Tyr	Val	Val	Arg	Asn	Gly
		115					120						125		
Ser	Leu	Cys	Glu	Glu	Asp	Trp	Ser	Asn	Val	Lys	Val	Gly	Asp	Val	Ile
	130					135						140			
Arg	Met	Met	Ser	Asn	Gln	Phe	Val	Ala	Ala	Asp	Leu	Leu	Leu	Leu	Ser
145					150					155					160
Thr	Ser	Glu	Pro	Tyr	Gly	Val	Cys	Phe	Ile	Glu	Thr	Met	Glu	Leu	Asp
				165					170						175
Gly	Glu	Thr	Asn	Leu	Lys	Asn	Arg	Ala	Ala	Ile	Ala	Cys	Thr	Gln	Glu
			180					185						190	
Met	Gly	Asp	Asp	Leu	Asp	Gly	Ile	Thr	Arg	Phe	Asp	Gly	Glu	Ile	Ile
		195					200					205			
Cys	Glu	Pro	Pro	Asn	Asn	Lys	Leu	Asp	Lys	Phe	Asn	Gly	Lys	Leu	Ile
	210					215						220			
Trp	Asn	Asn	His	Glu	Tyr	Gly	Val	Asn	Asn	Asp	Asn	Ile	Leu	Leu	Arg
225					230					235					240
Gly	Cys	Ile	Leu	Lys	Asn	Thr	Arg	Trp	Cys	Tyr	Gly	Val	Val	Val	Phe
				245					250						255
Ala	Gly	Lys	Asp	Thr	Lys	Leu	Met	Met	Asn	Ser	Gly	Lys	Thr	Lys	Phe
			260					265					270		
Lys	Arg	Thr	Ser	Leu	Asp	Arg	Phe	Leu	Asn	Ile	Leu	Ile	Val	Gly	Ile
	275						280						285		

Val Leu Phe Leu Ile Ala Met Cys Leu Ile Cys Thr Ile Leu Cys Ala  
 290 295 300

Val Trp Glu Tyr Gln Thr Gly Arg Tyr Phe Thr Ile Tyr Leu Pro Trp  
 305 310 315 320

Asp Asp Val Val Pro Ser Pro Glu Gln Arg Gly Gly Arg Gln Ile Ala  
 325 330 335

Leu Ile Ala Phe Leu Gln Phe Phe Ser Tyr Ile Ile Leu Leu Asn Thr  
 340 345 350

Val Val Pro Ile Ser Leu Tyr Val Ser Val Glu Ile Ile Arg Phe Ile  
 355 360 365

His Ser Leu Trp Ile Asn Tyr Asp Thr Gln Met Tyr Tyr Glu Asn Gly  
 370 375 380

Glu Lys Ser Val Pro Ala Lys Ala His Thr Thr Thr Leu Asn Glu Glu  
 385 390 395 400

Leu Gly Gln Val Gln Tyr Val Phe Ser Asp Lys Thr Gly Thr Leu Thr  
 405 410 415

Arg Asn Ile Met Thr Phe Asn Lys Cys Thr Ile Asn Gly Ile Ser Tyr  
 420 425 430

Gly Asp Ile Tyr Asp His Lys Gly Glu Val Ile Glu Thr Asn Asp Lys  
 435 440 445

Thr Lys Ser Leu Asp Phe Ser Trp Asn Ser Ala Ser Glu Pro Thr Phe  
 450 455 460

Lys Phe Phe Asp Lys Asn Leu Val Asp Ala Thr Lys Arg Gln Val Pro  
 465 470 475 480

Glu Ile Asp Gln Phe Trp Arg Leu Leu Ala Leu Cys His Thr Val Met  
 485 490 495

Pro Glu Arg Asp Lys Gly Gln Leu Val Tyr Gln Ala Gln Ser Pro Asp  
 500 505 510

Glu His Ala Leu Thr Ser Ala Ala Arg Asn Phe Gly Tyr Val Phe Arg  
 515 520 525

Ala	Arg	Thr	Pro	Gln	Ser	Ile	Thr	Ile	Glu	Val	Met	Gly	Asn	Glu	Glu	530	535	540	
Thr	His	Glu	Leu	Leu	Ala	Ile	Leu	Asp	Phe	Asn	Asn	Asp	Arg	Lys	Arg	545	550	555	560
Met	Ser	Val	Ile	Val	Lys	Gly	Pro	Asp	Gly	Lys	Ile	Arg	Leu	Tyr	Cys	565	570	575	
Lys	Gly	Ala	Asp	Met	Met	Ile	Met	Gln	Arg	Ile	His	Pro	Ser	Thr	Ser	580	585	590	
Gln	Ile	Met	Arg	Thr	Ser	Thr	Asn	Thr	His	Leu	Ala	Asp	Phe	Ala	Asn	595	600	605	
Ile	Gly	Leu	Arg	Thr	Leu	Cys	Leu	Gly	Tyr	Lys	Asp	Leu	Asp	Pro	Ala	610	615	620	
Tyr	Phe	Ser	Asp	Trp	Asp	Ser	Arg	Val	Lys	Lys	Ala	Ser	Ala	Ala	Met	625	630	635	640
Gln	Asp	Arg	Glu	Ser	Ala	Val	Asp	Ala	Leu	Tyr	Glu	Glu	Ile	Glu	Lys	645	650	655	
Asp	Leu	Ile	Leu	Ile	Gly	Ala	Thr	Ala	Ile	Glu	Asp	Lys	Leu	Gln	Asp	660	665	670	
Gly	Val	Pro	Glu	Ala	Ile	Ala	Arg	Leu	Ser	Glu	Ala	Asn	Ile	Lys	Ile	675	680	685	
Trp	Val	Leu	Thr	Gly	Asp	Lys	Thr	Glu	Thr	Ala	Ile	Asn	Ile	Ala	Tyr	690	695	700	
Ser	Cys	Arg	Leu	Leu	Thr	Asp	Glu	Thr	Lys	Glu	Ile	Val	Val	Val	Asp	705	710	715	720
Gly	Gln	Thr	Asp	Thr	Glu	Val	Glu	Val	Gln	Leu	Lys	Asp	Thr	Arg	Asn	725	730	735	
Thr	Phe	Glu	Gln	Ile	Leu	Ala	Leu	Pro	Ser	Pro	Leu	Gly	Gly	Lys	Pro	740	745	750	
Arg	Ile	Glu	Ile	Glu	Thr	Ile	His	Glu	Glu	Ser	Glu	Ala	Ile	Ser	Ser	755	760	765	

Ala Arg Ser Met Asp Arg Asn Ile Val Thr Pro Asp Leu Lys Ser Ala  
 770 775 780

Glu Met Ala Glu His Glu Ser Gly Gly Val Ala Leu Val Ile Asn Gly  
 785 790 795 800

Asp Ser Leu Ala Phe Ala Leu Gly Pro Arg Leu Glu Arg Thr Phe Leu  
 805 810 815

Glu Val Ala Cys Met Cys Asn Ala Val Ile Cys Cys Arg Val Thr Pro  
 820 825 830

Leu Gln Lys Ala Gln Val Val Asp Leu Val Lys Arg Asn Lys Lys Ala  
 835 840 845

Val Thr Leu Ser Ile Gly Asp Gly Ala Asn Asp Val Ser Met Ile Lys  
 850 855 860

Thr Ala His Ile Gly Val Gly Ile Ser Gly Gln Glu Gly Met Gln Ala  
 865 870 875 880

Val Leu Ala Ser Asp Tyr Ser Ile Gly Gln Phe Lys Tyr Leu Glu Arg  
 885 890 895

Leu Leu Leu Val His Gly Arg Trp Ser Tyr Ile Arg Met Ala Lys Phe  
 900 905 910

Leu Arg Tyr Phe Phe Tyr Lys Asn Phe Ala Phe Thr Leu Thr Asn Phe  
 915 920 925

Trp Tyr Ser Phe Phe Cys Gly Tyr Ser Ala Gln Thr Val Phe Asp Ala  
 930 935 940

Val Leu Ile Ala Cys Tyr Asn Leu Phe Phe Thr Ala Leu Pro Val Leu  
 945 950 955 960

Ala Met Gly Ser Leu Asp Gln Asp Val Asp Asp His Tyr Ser Leu Arg  
 965 970 975

Tyr Pro Lys Leu Tyr Leu Pro Gly Gln Phe Asn Leu Phe Phe Asn Met  
 980 985 990

Arg Ile Phe Ile Tyr Ser Val Leu His Gly Met Phe Ser Ser Leu Val  
 995 1000 1005

Ile Phe Phe Ile Pro Tyr Gly Ala Phe Tyr Asn Ala Ala Ala Ala

1010		1015		1020
Ser Gly	Lys Asp Leu Asp	Asp Tyr Ser Ala Leu	Ala Phe Thr Thr	
1025		1030	1035	
Phe Thr	Ala Leu Val Val Val	Val Thr Gly Gln Ile	Ala Phe Asp	
1040		1045	1050	
Thr Ser	Tyr Trp Thr Ala	Ile Ser His Phe Val	Ile Trp Gly Ser	
1055		1060	1065	
Leu Val	Leu Tyr Phe Leu	Val Cys Phe Leu Leu	Tyr Glu Trp Leu	
1070		1075	1080	
Pro Val	Ser Trp Ile Val	Lys Thr Ser Ser Ser	Ile Ser Tyr Gly	
1085		1090	1095	
Val Ala	Phe Arg Thr Met	Val Thr Pro His Phe	Trp Phe Ser Ile	
1100		1105	1110	
Leu Met	Val Ser Val Val	Leu Leu Leu Pro Val	Met Leu Asn Arg	
1115		1120	1125	
Phe Phe	Trp Leu Asp Thr	His Pro Ser Phe Ala	Asp Arg Leu Arg	
1130		1135	1140	
Ile Arg	Lys Lys Met Gly	Lys Lys Pro Ser Ala	Lys Asp Asp Lys	
1145		1150	1155	
Lys Thr	Ala Phe Lys Arg	Thr Ala Ala Thr Arg	Arg Ser Val Arg	
1160		1165	1170	
Gly Ser	Leu Arg Ser Gly	Tyr Ala Phe Ser His	Ser Gln Gly Phe	
1175		1180	1185	
Gly Glu	Leu Ile Leu Lys	Gly Lys Leu Phe Lys	Asn Val Glu Asn	
1190		1195	1200	
Leu Arg	Gly Lys Asn Asn	Ser Asn Ala Lys Ile	His Pro Thr Ser	
1205		1210	1215	
Asp Asp	Leu Gln Pro Met	Leu Ile Ser Ser Val	Pro Asp Asp Ser	
1220		1225	1230	
Gln Gly	Ala Ser Ser Ile	Asn Ala Met His Leu	Pro Met Gly Thr	

1235	1240	1245
Arg Pro Gln Asn Val Pro His Thr Leu Asn Val Asn Thr Asp Asp		
1250	1255	1260
Trp Ser Gln Ser Ser Asp Phe Arg Pro Ala Tyr Ala Lys Glu Pro		
1265	1270	1275
Ser Pro Leu Gln Gly Thr Val Ile Arg Gly Asp Gly Arg Ser His		
1280	1285	1290
Arg Asn His Val Tyr Ser Arg Glu Thr Gln Val Glu Glu Gln Pro		
1295	1300	1305
Asp Val Ile Thr Arg Leu		
1310		
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Met Ser Thr Glu Arg Asp Ser Glu Thr Thr Phe Asp Glu Phe Ser Gln		
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Pro Asn Asp Glu Val Val Pro Tyr Ser Asp Asp Glu Thr Glu Asp Glu		
20	25	30
Leu Asp Asp Gln Gly Ser Ala Val Glu Pro Glu Gln Asn Arg Asn Arg		
35	40	45
Val Asn Arg Arg Glu Ala Glu Glu Asn Arg Glu Pro Phe Arg Lys Glu		
50	55	60
Cys Thr Trp Gln Val Lys Ala Asn Asp Arg Lys Tyr His Glu Gln Pro		
65	70	75
His Phe Met Met Asn Thr Lys Phe Leu Cys Ile Lys Glu Ser Lys Tyr		
85	90	95
Ala Asn Asn Ala Ile Lys Thr Tyr Lys Tyr Asn Ala Phe Thr Phe Ile		
100	105	110
Pro Met Asn Leu Phe Glu Gln Phe Lys Arg Ala Asn Leu Tyr Phe Leu		
115	120	125

Ala	Leu	Leu	Ile	Leu	Gln	Ala	Val	Pro	Gln	Ile	Ser	Thr	Leu	Ala	Trp
130						135					140				
Tyr	Thr	Thr	Leu	Val	Pro	Leu	Leu	Val	Val	Leu	Gly	Val	Thr	Ala	Ile
145					150					155					160
Lys	Asp	Leu	Val	Asp	Asp	Val	Ala	Arg	His	Lys	Met	Asp	Lys	Glu	Ile
				165					170					175	
Met	Asn	Arg	Thr	Cys	Glu	Val	Ile	Lys	Asp	Gly	Arg	Phe	Lys	Val	Ala
			180					185					190		
Lys	Trp	Lys	Glu	Ile	Gln	Val	Gly	Asp	Val	Ile	Arg	Leu	Lys	Lys	Asn
		195					200					205			
Asp	Phe	Val	Pro	Ala	Asp	Ile	Leu	Leu	Leu	Ser	Ser	Ser	Glu	Pro	Asn
210						215					220				
Ser	Leu	Cys	Tyr	Val	Glu	Thr	Ala	Glu	Leu	Asp	Gly	Glu	Thr	Asn	Leu
225					230					235					240
Lys	Phe	Lys	Met	Ser	Ile	Glu	Ile	Thr	Asp	Cys	Tyr	Leu	Gln	Arg	Arg
				245					250					255	
Glu	Asp	Thr	Leu	Ala	Thr	Phe	Asp	Gly	Phe	Ile	Glu	Cys	Glu	Glu	Pro
			260					265					270		
Asn	Asn	Arg	Leu	Asp	Lys	Phe	Thr	Gly	Thr	Leu	Phe	Trp	Arg	Asn	Thr
		275					280					285			
Ser	Phe	Pro	Leu	Asp	Ala	Asp	Lys	Ile	Leu	Leu	Arg	Gly	Cys	Val	Ile
290						295					300				
Arg	Asn	Thr	Asp	Phe	Cys	Tyr	Gly	Val	Val	Val	Glu	Ala	Gly	Ala	Asp
305					310					315					320
Thr	Lys	Leu	Met	Lys	Asn	Ser	Gly	Lys	Thr	Pro	Arg	Thr	Lys	Ile	Asp
				325					330					335	
Tyr	Leu	Met	Asn	Tyr	Met	Val	Tyr	Thr	Ile	Phe	Val	Val	Leu	Ile	Leu
			340					345					350		
Leu	Ser	Ala	Gly	Leu	Ala	Ile	Gly	His	Ala	Tyr	Asn	Glu	Ala	Gln	Val
		355					360					365			



Gly Asn Ser Ser Trp Tyr Leu Tyr Asp Gly Glu Asp Asp Thr Pro Ser  
 370 375 380

Tyr Arg Gly Phe Leu Ile Phe Trp Gly Tyr Ile Ile Val Leu Asn Thr  
 385 390 395 400

Met Val Pro Ile Ser Leu Tyr Val Ser Val Glu Val Ile Arg Leu Gly  
 405 410 415

Gln Ser His Phe Ile Asn Trp Asp Leu Gln Met Tyr Tyr Ala Lys Asp  
 420 425 430

Thr Pro Ala Lys Ala Arg Thr Thr Thr Leu Asn Glu Gln Leu Gly Gln  
 435 440 445

Ile His Tyr Ile Phe Ser Asp Lys Thr Gly Thr Lys Thr Gln Asn Ile  
 450 455 460

Met Thr Phe Lys Lys Cys Cys Ile Asn Gly Gln Ile Tyr Gly Asp His  
 465 470 475 480

His Asp Ala Ser Gln His Asn His Asn Lys Ile Glu Gln Val Asp Phe  
 485 490 495

Ser Trp Asn Thr Tyr Ala Asp Gly Lys Leu Ala Phe Tyr Asp His Tyr  
 500 505 510

Leu Ile Glu Gln Ile Gln Ser Gly Lys Glu Pro Glu Val Glu Arg Gln  
 515 520 525

Phe Phe Phe Leu Leu Ala Val Cys His Thr Val Met Val Asp Arg Thr  
 530 535 540

Asp Gly Gln Leu Asn Gln Ala Ala Ser Pro Asp Glu Gly Ala Leu Val  
 545 550 555 560

Asn Ala Ala Arg Asn Phe Gly Phe Ala Phe Leu Ala Arg Thr Gln Asn  
 565 570 575

Thr Ile Thr Ile Ser Glu Leu Gly Thr Glu Arg Thr Tyr Asn Val Leu  
 580 585 590

Ala Ile Leu Asp Phe Asn Ser Asp Arg Lys Arg Met Ser Ile Ile Val  
 595 600 605

Arg Thr Pro Glu Gly Asn Ile Lys Leu Tyr Cys Lys Gly Ala Asp Thr

610	615	620
Val Ile Tyr Glu Arg Leu His Arg Met Asn Pro Thr Lys Gln Glu Thr		
625	630	635 640
Gln Asp Ala Leu Asp Ile Phe Ala Asn Glu Thr Leu Arg Thr Leu Cys		
	645	650 655
Leu Cys Tyr Lys Glu Ile Glu Glu Lys Glu Phe Thr Glu Trp Asn Lys		
	660	665 670
Lys Phe Met Ala Ala Ser Val Ala Ser Thr Asn Arg Asp Glu Ala Leu		
	675	680 685
Asp Lys Val Tyr Glu Glu Ile Glu Lys Asp Leu Ile Leu Leu Gly Ala		
	690	695 700
Thr Ala Ile Glu Asp Lys Leu Gln Asp Gly Val Pro Glu Thr Ile Ser		
705	710	715 720
Lys Leu Ala Lys Ala Asp Ile Lys Ile Trp Val Leu Thr Gly Asp Lys		
	725	730 735
Lys Glu Thr Ala Glu Asn Ile Gly Glu Ala Cys Glu Leu Leu Thr Glu		
	740	745 750
Asp Thr Thr Ile Cys Tyr Gly Glu Asp Ile Asn Ser Leu Leu His Ala		
	755	760 765
Arg Met Glu Asn Gln Arg Asn Arg Gly Gly Val Tyr Ala Lys Ala Pro		
	770	775 780
Pro Val Gln Glu Ser Phe Phe Pro Phe Phe Pro Pro Gly Gly Arg Ala		
785	790	795 800
Leu Ile Ile Thr Gly Ser Trp Leu Asn Glu Ile Leu Leu Glu Lys Lys		
	805	810 815
Thr Lys Arg Asn Lys Ile Leu Lys Leu Lys Phe Pro Arg Thr Glu Glu		
	820	825 830
Glu Arg Arg Met Arg Thr Gln Ser Lys Arg Arg Leu Glu Ala Lys Lys		
	835	840 845
Glu Gln Arg Gln Lys Asn Phe Val Asp Leu Ala Cys Glu Cys Ser Ala		
850	855	860

Val Ile Cys Cys Cys Arg Val Thr Pro Lys Gln Lys Ala Met Val Val  
865 870 875 880

Asp Leu Val Lys Arg Lys Lys Ala Ile Thr Leu Ala Ile Gly Asp Gly  
885 890 895

Ala Asn Asp Val Asn Met Ile Lys Thr Ala His Ile Gly Val Gly Ile  
900 905 910

Ser Gly Gln Glu Gly Met Cys Ala Val Met Ser Ser Asp Tyr Ser Phe  
915 920 925

Ala Gln Phe Arg Tyr Leu Gln Arg Leu Leu Leu Val His Gly Arg Trp  
930 935 940

Ser Ile Arg Met Cys Lys Phe Leu Arg Tyr Phe Phe Tyr Lys Asn Phe  
945 950 955 960

Ala Phe Thr Leu Val His Phe Trp Tyr Ser Phe Phe Asn Gly Tyr Ser  
965 970 975

Ala Gln Thr Ala Tyr Glu Asp Trp Phe Ile Thr Leu Tyr Asn Val Leu  
980 985 990

Tyr Thr Ser Leu Pro Val Leu Leu Met Gly Leu Leu Asp Gln Asp Val  
995 1000 1005

Ser Asp Lys Leu Ser Leu Arg Phe Pro Gly Leu Tyr Ile Val Gly  
1010 1015 1020

Gln Arg Asp Leu Leu Phe Asn Tyr Lys Arg Phe Phe Val Ser Leu  
1025 1030 1035

Leu His Gly Val Leu Thr Ser Met Leu Phe Phe Ile Pro Leu Gly  
1040 1045 1050

Ala Tyr Leu Gln Thr Val Gly Gln Asp Gly Glu Ala Pro Ser Asp  
1055 1060 1065

Tyr Gln Ser Phe Ala Val Thr Ile Ala Ser Ala Leu Val Ile Thr  
1070 1075 1080

Val Asn Phe Gln Ile Gly Leu Asp Thr Ser Tyr Trp Thr Phe Val  
1085 1090 1095

Asn Ala Phe Ser Ile Phe Gly Ser Ile Ala Leu Tyr Phe Gly Ile  
 1100 1105 1110

Met Phe Asp Phe His Ser Ala Gly Ile His Val Leu Phe Pro Ser  
 1115 1120 1125

Ala Phe Gln Phe Thr Gly Thr Ala Ser Asn Ala Leu Gln Pro Tyr  
 1130 1135 1140

Ile Trp Leu Thr Ile Ile Leu Thr Val Ala Val Cys Leu Leu Pro  
 1145 1150 1155

Val Pro Ala Ile Arg Phe Leu Ser Met Thr Ile Trp Pro Ser Glu  
 1160 1165 1170

Ser Asp Lys Ile Gln Lys His Arg Lys Arg Leu Lys Ala Glu Glu  
 1175 1180 1185

Gln Trp Gln Arg Arg Gln Gln Val Phe Arg Arg Gly Val Ser Thr  
 1190 1195 1200

Arg Arg Ser Ala Tyr Ala Phe Ser His Gln Arg Gly Tyr Ala Asp  
 1205 1210 1215

Leu Ile Ser Ser Gly Arg Ser Ile Arg Lys Lys Arg Ser Pro Leu  
 1220 1225 1230

Asp Ala Ile Val Ala Asp Gly Thr Ala Glu Tyr Arg Arg Tyr Thr  
 1235 1240 1245

Gly Asp Ser  
 1250

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Met Asp Thr Leu Arg Ala Val Pro Leu Phe Ser Ile Ser Gly Leu Phe  
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Ser Phe Pro Tyr Arg Val Ser His Gly Ile Ala Gly Ile Leu Leu Gly  
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Glu Met Ala Val Cys Ala Lys Lys Arg Pro Pro Glu Glu Glu Arg Arg

35	40	45															
Ala	Arg	Ala	Asn	Asp	Arg	Glu	Tyr	Asn	Glu	Lys	Phe	Gln	Tyr	Ala	Ser		
50						55					60						
Asn	Cys	Ile	Lys	Thr	Ser	Lys	Tyr	Asn	Ala	Phe	Thr	Phe	Ile	Pro	Met		
65					70					75					80		
Asn	Leu	Pro	Glu	Ser	Gln	Phe	Lys	Phe	Ala	Ala	Asn	Leu	Tyr	Phe	Leu		
				85					90					95			
Ala	Leu	Leu	Ile	Leu	Gln	Ala	Val	Pro	Gln	Ile	Ser	Thr	Leu	Ala	Trp		
			100					105						110			
Tyr	Thr	Thr	Leu	Val	Pro	Leu	Leu	Val	Val	Leu	Thr	Ile	Thr	Ala	Val		
		115					120					125					
Lys	Asp	Ala	Ala	Thr	Asp	Asp	Tyr	Phe	Arg	His	Lys	Ser	Asp	Asn	Gln		
130						135					140						
Val	Asn	Asn	Arg	Gln	Ser	Gln	Val	Leu	Ile	Asn	Gly	Ile	Leu	Gln	Gln		
145					150					155					160		
Glu	Gln	Asn	Met	Val	Cys	Val	Gly	Asp	Ile	Ile	Lys	Leu	Glu	Asn	Asn		
				165					170						175		
Gln	Phe	Val	Ala	Ala	Asp	Leu	Leu	Leu	Leu	Ser	Ser	Ser	Glu	Pro	His		
			180					185					190				
Gly	Leu	Cys	Tyr	Ile	Glu	Thr	Ala	Glu	Leu	Asp	Gly	Glu	Thr	Asn	Met		
	195						200					205					
Lys	Val	Arg	Gln	Ala	Ile	Pro	Val	Thr	Ser	Glu	Leu	Gly	Asp	Ile	Ser		
210						215					220						
Lys	Leu	Ala	Glu	Lys	Phe	Asp	Gly	Glu	Val	Ile	Cys	Glu	Pro	Pro	Asn		
225					230					235					240		
Asn	Lys	Leu	Asp	Lys	Phe	Ser	Gly	Thr	Leu	Tyr	Gln	Lys	Glu	Asn	Lys		
				245					250					255			
Phe	Pro	Leu	Ser	Asn	Gln	Asn	Met	Leu	Leu	Arg	Gly	Cys	Val	Leu	Arg		
			260					265					270				
Asn	Thr	Glu	Trp	Cys	Phe	Gly	Leu	Val	Ile	Phe	Ala	Gly	Pro	Asp	Thr		
275							280					285					

Lys Leu Met Gln Asn Ser Gly Arg Thr Lys Phe Lys Arg Thr Ser Ile  
 290 295 300

Leu Arg Leu Met Asn Thr Leu Val Leu Trp Ile Phe Gly Phe Leu Val  
 305 310 315 320

Cys Met Gly Val Ile Leu Ala Ile Gly Asn Ala Ile Trp Glu His Glu  
 325 330 335

Val Gly Met Arg Phe Gln Val Tyr Leu Pro Trp Asp Glu Ala Val Asp  
 340 345 350

Ser Ala Phe Phe Ser Phe Leu Ser Phe Trp Ser Tyr Ile Ile Ile Leu  
 355 360 365

Asn Thr Val Val Pro Ile Ser Leu Tyr Val Ser Val Glu Val Ile Arg  
 370 375 380

Leu Gly His Ser Tyr Phe Ile Asn Trp Asp Lys Lys Met Phe Cys Met  
 385 390 395 400

Lys Lys Arg Thr Pro Ala Glu Ala Arg Thr Thr Thr Leu Asn Glu Gln  
 405 410 415

Leu Gly Gln Ile His Tyr Ile Phe Ser Asp Lys Leu Thr Gln Asn Ile  
 420 425 430

Met Val Phe Asn Lys Cys Ser Ile Asn Gly His Ser Tyr Gly Asp Val  
 435 440 445

Phe Asp Val Leu Gly His Lys Ala Glu Leu Gly Glu Arg Pro Glu Pro  
 450 455 460

Val Asp Phe Ser Phe Asn Pro Leu Ala Asp Lys Lys Phe Leu Phe Trp  
 465 470 475 480

Asp Pro Leu Leu Glu Ala Val Lys Ile Gly Asp Pro His Thr His Glu  
 485 490 495

Phe Phe Arg Leu Leu Ser Leu Cys His Thr Val Met Val Arg Glu Ser  
 500 505 510

Pro Arg Glu Pro Glu Arg Pro Asp Gln Leu Leu Tyr Gln Ala Ala Ser  
 515 520 525

Pro Glu Gly Ala Leu Val Thr Ala Ala Arg Asn Phe Gly Phe Val Phe  
 530 535 540

Arg Thr Pro Lys Thr Ile Thr Val His Glu Met Gly Thr Ala Ile Thr  
 545 550 555 560

Tyr Gln Leu Leu Ala Ala Ile Leu Asp Phe Asn Asn Ile Arg Lys Arg  
 565 570 575

Lys Arg Met Ser Val Ile Val Arg Asn Pro Gly Glu Gly Lys Ile Arg  
 580 585 590

Leu Tyr Cys Lys Gly Ala Asp Thr Ile Leu Asp Arg Leu His Ser Thr  
 595 600 605

Gln Glu Leu Leu Asn Thr Thr Met Asp His Leu Asn Glu Tyr Ser Ser  
 610 615 620

Ala Gly Glu Gly Leu Arg Leu Val Leu Ala Tyr Lys Asp Lys Asp Glu  
 625 630 635 640

Glu Tyr Tyr Glu Glu Trp Ala Glu Arg Arg Leu Gln Ala Ser Leu Ala  
 645 650 655

Gln Asp Ser Arg Glu Asp Arg Leu Ala Ser Ile Tyr Glu Glu Val Glu  
 660 665 670

Asn Asn Met Met Leu Leu Gly Ala Thr Ala Ile Glu Gly Lys Leu Gln  
 675 680 685

Gln Gly Val Pro Glu Thr Ile Ala Leu Leu Thr Leu Ala Asn Ile Lys  
 690 695 700

Ile Trp Val Leu Thr Gly Asp Lys Gln Glu Thr Ala Val Asn Ile Gly  
 705 710 715 720

Tyr Ser Cys Lys Met Leu Thr Asp Asp Met Thr Glu Val Phe Ile Val  
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Thr Gly His Thr Val Leu Glu Val Arg Glu Glu Leu Arg Lys Ala Arg  
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Glu Lys Met Met Asp Ser Ser Arg Ser Val Gly Asn Gly Phe Thr Tyr  
 755 760 765

Gln Asp Lys Leu Ser Ser Ser Lys Leu Thr Ser Val Leu Glu Ala Val  
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Ala Gly Glu Tyr Ala Val Ile Asn Gly His Ser Leu Ala His Ala Leu  
 785 790 795 800

Glu Ala Asp Met Glu Leu Glu Phe Leu Glu Thr Ala Cys Ala Cys Lys  
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Ala Val Ile Cys Cys Arg Val Thr Pro Pro Leu Gln Lys Ala Cys Val  
 820 825 830

Val Glu Leu Val Lys Lys Tyr Lys Lys Ala Val Thr Leu Ala Ile Gly  
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Asp Gly Ala Asn Asp Val Ser Met Ile Lys Lys Thr Ala His His Ile  
 850 855 860

Gly Val Gly Ile Ser Gly Gln Glu Gly Ile Gln Ala Val Leu Ala Ser  
 865 870 875 880

Asp Tyr Ser Phe Phe Ser Gln Phe Lys Phe Leu Gln Arg Leu Leu Leu  
 885 890 895

Val His Gly Arg Trp Ser Tyr Leu Arg Met Cys Lys Phe Leu Cys Tyr  
 900 905 910

Phe Phe Tyr Lys Asn Phe Ala Phe Thr Met Val His Phe Trp Phe Gly  
 915 920 925

Phe Phe Cys Cys Phe Ser Ala Gln Thr Phe Ile Thr Leu Tyr Asn Ile  
 930 935 940

Val Tyr Thr Ser Leu Pro Val Leu Ala Met Gly Val Phe Asp Gln Asp  
 945 950 955 960

Val Pro Glu Gln Arg Ser Met Glu Tyr Pro Lys Leu Tyr Glu Pro Gly  
 965 970 975

Gln Leu Asn Leu Leu Phe Asn Lys Arg Glu Phe Phe Ile Cys Ile Ala  
 980 985 990

Gln Cys Ile Tyr Thr Ser Val Leu Met Phe Phe Ile Phe Tyr Gly Val  
 995 1000 1005

Phe Ala Asp Ala Thr Arg Asp Asp Gly Thr Gln Leu Ala Asp Tyr



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Gln Ser Phe Ala Val Ile Val Ala Thr Ser Leu Val Ile Val Val				
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Ser Val Gln Ile Gly Leu Asp Thr Gly Tyr Trp Thr Ile Asn His				
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Phe Phe Ile Gln Gly Ser Leu Ala Val Tyr Phe Ala Ile Leu Phe				
1055		1060		1065
Ala Met His Ser Asn Gly Leu Phe Asp Met Phe Pro Asn Gln Phe				
1070		1075		1080
Arg Phe Val Gly Asn Ala Gln Asn Thr Leu Ala Gln Pro Thr Val				
1085		1090		1095
Trp Leu Thr Ile Val Leu Thr Thr Val Val Cys Ile Met Pro Val				
1100		1105		1110
Val Ala Phe Arg Phe Leu Arg Leu Asn Leu Lys Pro Asp Leu Ser				
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Asp Thr Val Arg Tyr Thr Gln Leu Val Arg Lys Lys Gln Lys Ala				
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Gln His Arg Cys Met Arg Arg Val Gly Arg Thr Gly Ser Arg Arg				
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Ser Gly Tyr Ala Phe Ser His Ser His Gln Glu Gly Phe Gly Glu				
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Leu Ile Ile Ser Gly Lys Asn Met Arg Leu Ser Ser Leu Ala Leu				
1175		1180		1185
Ser Ser Phe Thr Thr Arg Ser Ser Ser Ser Trp Ile Glu Ser Leu				
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Lys Pro Leu Lys Gly				
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<213> Homo sapiens

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His Arg Ala Asn Gly Ser Thr Thr Ser Ala Ala Leu Asp Ala Arg Gly  
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Leu Pro Pro Pro Ala Ser Pro Ala Pro Thr Pro Arg Ser Thr Ala Gly  
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Pro Glu Pro Ser Pro Ala Pro Pro Gly Pro Gly Asp Thr Gly Asp Ser  
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Asp Val Thr Gln Glu Gly Ser Asp Val Thr Gln Glu Gly Ser Gly Asp  
100 105 110

Val Thr Gln Glu Gly Ser Gly Pro Ala Gly Ile Arg Gly Val Glu Lys  
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Ile Pro Gly Ser Ser Asp Asp Val Arg Leu Pro Pro Ser Pro Pro Ser  
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Glu Phe Ala Ala Gln Pro Gly Gly Ser Gly Cys Pro Arg Gln Asp Thr  
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Gln Pro Met Gly His Ser Glu Pro Gly Gly Glu Ala Ala Asp Glu Cys  
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Gly Ser Pro Thr Ser Met Gly Ser Leu Gly Gln Arg Glu Asp Leu Gln  
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Asp Glu Asp Arg Asn Ser Ala Phe Thr Trp Lys Val Gln Ala Asn Asn  
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Arg Ala Tyr Asn Gly Gln Phe Lys Glu Lys Val Ile Leu Cys Trp Gln  
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Arg Lys Lys Tyr Lys Thr Asn Val Ile Arg Thr Ala Lys Tyr Asn Phe  
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 Tyr Phe Leu Pro Pro Leu Leu Asn Asn Tyr Glu Gln Pro His Arg Val  
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 Ser Asn Leu Phe Pro Leu Ile Ile Ile Ile Leu Gln Ser Ile Pro Asp  
 260 265 270  
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 Thr Asp Thr Cys Tyr Gly Leu Val Ile Tyr Ala Gly Phe Asp Thr Lys  
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 Ile Met Lys Asn Cys Gly Lys Ile His Leu Lys Arg Thr Lys Leu Asp  
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 Leu Leu Met Asn Asn Lys Lys Leu Val Val Val Ile Phe Ile Ser Val  
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 Val Leu Val Cys Leu Val Ala Arg Gly Phe Gly Phe Ser Val Lys Glu  
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 Phe Lys Asp His His Tyr Tyr Leu Ser Gly Val His Gly Ser Ser Val  
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 Ala Ala Glu Ser Phe Phe Val Phe Trp Ser Phe Leu Ile Leu Leu Ser  
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 Val Thr Ile Pro Met Ser Met Phe Leu Ser Glu Phe Ile Tyr Leu Gly  
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 Asn Ser Val Phe Ile Asp Trp Asp Val Gln Met Tyr Tyr Lys Pro Gln  
 405 410 415  
 Asp Val Pro Ala Lys Ala Arg Ser Thr Ser Leu Asn Asp His Leu Gly  
 420 425 430  
 Gln Val Glu Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu Thr Gln Asn  
 435 440 445  
 Asn Ile Leu Thr Phe Asn Lys Cys Cys Ile Ser Gly Arg Val Tyr Gly  
 450 455 460  
 Arg Pro Ser Glu Ala Thr Thr Arg Pro Lys Glu Asn Pro Tyr Leu Trp

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Leu Ala Ile Cys His Thr Val Met Val Arg Glu Ser Pro Arg Glu Arg	515		520		525	
Pro Asp Gln Leu Leu Tyr Gln Ala Ala Ser Pro Asp Glu Gly Leu Val	530		535		540	
Thr Ala Ala Arg Asn Phe Gly Tyr Val Phe Leu Ser Arg Thr Gln Asp	545		550		555	560
Thr Val Thr Ile Met Glu Leu Gly Glu Glu Arg Val Tyr Gln Val Leu	565		570		575	
Ala Ile Met Asp Phe Asn Ser Thr Arg Lys Arg Met Ser Val Leu Val	580		585		590	
Arg Lys Pro Glu Gly Ala Ile Cys Leu Tyr Thr Lys Gly Ala Asp Thr	595		600		605	
Val Ile Phe Glu Arg Leu His Arg Arg Gly Ala Met Glu Phe Ala Ile	610		615		620	
Glu Glu Ala Leu Ala Gly Gln Glu Glu Glu Glu Ala Gly Glu Glu Thr	625		630		635	640
Val Arg Arg Asn Gly Arg Leu Gln Val Pro Gly Met Ala Met Tyr Ser	645		650		655	
Glu Ala Gln Glu Thr Leu Arg Thr Leu Cys Leu Ala Tyr Arg Glu Val	660		665		670	
Ala Glu Asp Ile Tyr Glu Asp Trp Gln Gln Arg His Gln Glu Ala Ser	675		680		685	
Leu Leu Leu Gln Asn Arg Ala Gln Ala Leu Gln Gln Val Tyr Asn Glu	690		695		700	
Met Glu Gln Asp Leu Arg Leu Leu Gly Ala Thr Ala Ile Glu Asp Arg	705		710		715	720

Leu Gln Asp Gly Val Pro Glu Thr Ile Lys Cys Leu Lys Lys Ser Asn  
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 755 760 765

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Ile Leu Glu Glu Lys Glu Ile Ser Arg Ile Leu Glu Thr Tyr Trp Glu  
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Ala Leu Val Ile Asn Gly Asp Phe Leu Asp Lys Leu Leu Val Ser Leu  
 820 825 830

Arg Lys Glu Pro Arg Ala Leu Ala Gln Asn Val Met Asp Glu Ala Trp  
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Gln Glu Leu Gly Gln Ser Arg Arg Asp Phe Leu Tyr Ala Arg Arg Leu  
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Ser Leu Leu Cys Arg Arg Gly Leu Pro Leu Ala Ala Pro Pro Ala Pro  
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Pro Ala Gln Asp Ser Arg Ala Arg Arg Ser Ser Glu Val Leu Gln Glu  
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Arg Ala Phe Val Asp Leu Ala Ser Lys Cys Gln Ala Val Ile Cys Cys  
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Arg Val Thr Pro Lys Gln Lys Ala Leu Ile Val Ala Leu Val Lys Lys  
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Tyr His Gln Val Val Thr Leu Ala Ile Gly Asp Ala Asn Asp Ile Asn  
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Met Ile Lys Thr Ala Asp Val Gly Val Gly Leu Ala Gly Gln Glu Gly  
 945 950 955 960

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Leu	Gln	Arg	Leu	Leu	Leu	Val	His	Gly	Arg	Trp	Ser	Tyr	Val	Arg	Ile
			980					985					990		
Cys	Lys	Phe	Leu	Arg	Tyr	Phe	Phe	Tyr	Lys	Ser	Met	Ala	Ser	Met	Met
		995					1000					1005			
Val	Gln	Val	Trp	Phe	Ala	Cys	Tyr	Asn	Asn	Gly	Phe	Thr	Gly	Gln	
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Pro	Leu	Tyr	Arg	Gly	Trp	Phe	Leu	Ala	Leu	Phe	Asn	Leu	Leu	Tyr	
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Ser	Thr	Leu	Pro	Val	Leu	Tyr	Ile	Gly	Leu	Phe	Glu	Gln	Asp	Val	
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Ser	Ala	Glu	Gln	Ser	Leu	Glu	Lys	Pro	Glu	Leu	Tyr	Val	Val	Gly	
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Gln	Lys	Asp	Glu	Leu	Phe	Asn	Tyr	Trp	Val	Phe	Val	Gln	Ala	Ile	
	1070					1075					1080				
Ala	His	Gly	Val	Thr	Thr	Ser	Leu	Trp	Asn	Phe	Phe	Met	Thr	Leu	
	1085					1090					1095				
Trp	Ile	Ser	Arg	Asp	Thr	Ala	Ser	Gly	Pro	Ala	Ser	Phe	Ser	Asp	
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His	Gln	Ser	Phe	Ala	Val	Val	Val	Ala	Leu	Ser	Cys	Leu	Leu	Ser	
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Ile	Thr	Met	Glu	Trp	Val	Gly	Lys	Val	Leu	Thr	Ser	Pro	Gly	Pro	
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Trp	Thr	Trp	Pro	Met	Glu	Ala	Ser	Ser	Pro	Gly	Asp	Ala	Cys	Phe	
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Val Gln Val Ile Leu Ile Ile Lys Tyr Trp Thr Ala Leu Cys Val  
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Ala Thr Ile Leu Leu Ser Leu Gly Phe Tyr Ala Ile Met Thr Thr  
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Thr Thr Gln Ser Phe Trp Leu Phe Arg Val Ser Pro Thr Thr Phe  
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Pro Phe Leu Tyr Ala Asp Leu Ser Val Met Ser Ser Pro Ser Ile  
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Leu Leu Val Val Leu Leu Ser Val Ser Ile Asn Thr Phe Pro Val  
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Leu Ala Leu Arg Val Ile Phe Pro Ala Leu Lys Glu Leu Arg Ala  
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Lys Glu Glu Lys Val Glu Glu Gly Pro Ser Glu Glu Ile Phe Thr  
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Met Glu Pro Leu Pro His Val His Arg Glu Ser Arg Ala Arg Arg  
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Ser Ser Tyr Ala Phe Ser His Arg Glu Gly Tyr Ala Asn Leu Ile  
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Thr Gln Gly Thr Ile Leu Arg Arg Gly Pro Gly Val Ser Ser Asp  
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Ser Pro Lys Glu Ser Gln  
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Val	Glu	Thr	Ala	Glu	Leu	Asp	Gly	Glu	Thr	Asn	Leu	Lys	Val	Arg	His	35	40	45	
Ala	Leu	Ser	Val	Thr	Ser	Glu	Leu	Gly	Ala	Asp	Ile	Ser	Arg	Leu	Ala	50	55	60	
Gly	Phe	Asp	Gly	Ile	Val	Val	Cys	Glu	Val	Pro	Asn	Asn	Lys	Leu	Asp	65	70	75	80
Lys	Phe	Met	Gly	Ile	Leu	Ser	Trp	Lys	Asp	Ser	Lys	His	Ser	Leu	Asn	85	90	95	
Asn	Glu	Lys	Ile	Ile	Leu	Arg	Gly	Cys	Ile	Leu	Arg	Asn	Thr	Ser	Trp	100	105	110	
Cys	Phe	Gly	Met	Val	Ile	Phe	Ala	Gly	Pro	Asp	Thr	Lys	Leu	Met	Gln	115	120	125	
Asn	Ser	Lys	Thr	Lys	Phe	Lys	Arg	Thr	Ser	Ile	Asp	Arg	Leu	Met	Asn	130	135	140	
Thr	Leu	Val	Leu	Trp	Ile	Phe	Gly	Leu	Ile	Cys	Leu	Gly	Ile	Ile	Leu	145	150	155	160
Ala	Ile	Gly	Asn	Asn	Ser	Ile	Trp	Glu	Ser	Gln	Thr	Gly	Asp	Gln	Phe	165	170	175	
Arg	Thr	Phe	Leu	Phe	Trp	Asn	Glu	Gly	Glu	Lys	Ser	Ser	Val	Phe	Ser	180	185	190	
Gly	Phe	Leu	Thr	Phe	Trp	Ser	Tyr	Ile	Ile	Leu	Asn	Thr	Val	Val	Pro	195	200	205	
Ile	Ser	Leu	Tyr	Val	Ser	Val	Glu	Val	Ile	Arg	Leu	Gly	His	Ser	Tyr	210	215	220	
Phe	Ile	Asn	Trp	Asp	Arg	Lys	Met	Tyr	Tyr	Ser	Arg	Lys	Ala	Ile	Pro	225	230	235	240
Ala	Val	Ala	Arg	Thr	Thr	Thr	Leu	Asn	Glu	Glu	Leu	Gly	Gln	Ile	Glu	245	250	255	
Tyr	Ile	Phe	Ser	Asp	Lys	Thr	Gly	Thr	Leu	Thr	Gln	Asn	Ile	Met	Thr	260	265	270	



Phe Lys Arg Cys Ser Ile Asn Gly Arg Ile Tyr Gly Glu Val His Asp  
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Asp Leu Asp Gln Lys Thr Glu Ile Thr Gln Glu Lys Glu Pro Val Asp  
290 295 300  
Phe Ser Val Lys Ser Ser Gln Ala Asp Arg Glu Phe Gln Phe Phe Asp  
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His His Leu Met Glu Ser Ser Ile Lys Met Gly Asp Pro Lys Val His  
325 330 335  
Glu Phe Leu Arg Leu Leu Ala Leu Cys His Thr Val Met Ser Glu Glu  
340 345 350  
Asn Ser Ala Gly Glu Leu Ile Tyr Gln Val Gln Ser Pro Asp Glu Gly  
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Ala Leu Val Thr Ala Ala Arg Asn Phe Gly Phe Ile Phe Lys Ser Arg  
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Thr Pro Glu Thr Ile Thr Ile Glu Glu Leu Gly Thr Leu Val Thr Tyr  
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Gln Leu Leu Ala Phe Leu Asp Phe Asn Asn Thr Arg Lys Arg Met Ser  
405 410 415  
Val Ile Val Arg Asn Pro Glu Gly Gln Ile Lys Leu Tyr Ser Lys Gly  
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Ala Asp Thr Ile Leu Phe Glu Lys Leu His Pro Ser Asn Glu Val Leu  
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Leu Ser Leu Thr Ser Asp His Leu Ser Glu Phe Ala Gly Glu Gly Leu  
450 455 460  
Arg Thr Leu Ala Ile Ala Tyr Arg Asp Leu Asp Asp Lys Tyr Phe Lys  
465 470 475 480  
Glu Trp His Lys Met Leu Glu Asp Ala Asn Ala Ala Thr Glu Glu Arg  
485 490 495  
Asp Glu Arg Ile Ala Gly Leu Tyr Glu Glu Ile Glu Arg Asp Leu Met  
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Leu Gly Ala Thr Ala Val Glu Asp Lys Leu Gln Glu Gly Val Ile Glu  
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Gly Asp Lys Glu Thr Ala Ile Asn Ile Gly Tyr Ala Cys Asn Met Leu  
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Asp Asp Asn Asp Val Phe Val Ile Ala Gly Asn Asn Ala Val Glu Val  
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Arg Glu Glu Leu Leu Arg Lys Ala Lys Gln Asn Leu Phe Gly Asn Arg  
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Asn Phe Ser Asn Gly His Val Val Cys Glu Lys Lys Gln Gln Leu Glu  
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Leu Asp Ser Ile Val Glu Glu Thr Ile Thr Gly Asp Tyr Ala Leu Ile  
 610 615 620

Ile Asn Gly His Ser Leu Ala His Ala Leu Glu Ser Asp Val Lys Asn  
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Asp Leu Leu Glu Leu Ala Cys Met Cys Lys Thr Val Lys Cys Cys Arg  
 645 650 655

Val Thr Pro Leu Gln Lys Ala Gln Val Val Glu Leu Val Lys Lys Tyr  
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Arg Asn Ala Val Thr Leu Ala Ile Gly Asp Gly Ala Asn Asp Val Ser  
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Met Ile Lys Ser Ala His Ile Gly Val Gly Ile Ser Gly Gln Glu Gly  
 690 695 700

Leu Gln Ala Val Leu Ala Ser Asp Tyr Ser Phe Ala Gln Phe Arg Tyr  
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Leu Gln Arg Leu Leu Leu Val His Gly Arg Trp Ser Tyr Phe Arg Met  
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Cys Lys Phe Leu Cys Tyr Phe Phe Tyr Lys Asn Phe Ala Phe Thr Leu  
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Val His Phe Trp Phe Gly Phe Phe Cys Gly Phe Ser Ala Gln Thr Val

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Val	Leu	Ala	Met	Gly	Ile	Phe	Asp	Gln	Asp	Val	Ser	Asp	Gln	Asn	Ser		
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Val	Asp	Cys	Pro	Gln	Leu	Tyr	Lys	Pro	Gly	Gln	Leu	Asn	Leu	Leu	Phe		
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Asn	Lys	Arg	Lys	Phe	Phe	Ile	Cys	Val	Leu	His	Gly	Ile	Tyr	Thr	Ser		
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Leu	Val	Leu	Phe	Phe	Ile	Pro	Tyr	Gly	Ala	Phe	Tyr	Asn	Val	Ala	Gly		
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Glu	Asp	Gly	Gln	His	Ile	Ala	Asp	Tyr	Gln	Ser	Phe	Ala	Val	Thr	Met		
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Ala	Thr	Ser	Leu	Val	Ile	Val	Tyr	Ser	Val	Gln	Ile	Ala	Leu	Asp	Thr		
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Ser	Tyr	Trp	Phe	Ile	Asn	His	Val	Phe	Trp	Gly	Ser	Ile	Ala	Ile	Tyr		
				885					890						895		
Phe	Ser	Ile	Leu	Phe	Thr	Met	His	Ser	Asn	Gly	Ile	Phe	Gly	Ile	Phe		
			900					905					910				
Pro	Asn	Gln	Phe	Pro	Phe	Val	Gly	Asn	Ala	Arg	His	Ser	Leu	Thr	Gln		
		915					920					925					
Lys	Cys	Ile	Trp	Leu	Val	Ile	Leu	Leu	Thr	Thr	Val	Ala	Ser	Val	Met		
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Pro	Val	Val	Ala	Phe	Arg	Phe	Leu	Lys	Val	Asp	Leu	Tyr	Pro	Thr	Leu		
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Ser	Asp	Gln	Ile	Arg	Arg	Trp	Gln	Lys	Ala	Gln	Lys	Lys	Ala	Arg	Pro		
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Pro	Ser	Ser	Arg	Arg	Pro	Pro	Thr	Arg	Ser	Ser	Ser	Arg	Arg	Ser	Gly		
			980					985					990				
Tyr	Ala	Phe	His	Gln	Glu	Gly	Tyr	Gly	Glu	Leu	Ile	Thr	Ser	Gly	Lys		
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Asn Met	Arg Ala Lys Asn Pro	Pro Pro Thr Ser Gly	Leu Glu Lys
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Thr His	Tyr Asn Ser Thr Ser	Trp Ile Glu Asn Leu	Cys Lys Thr
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